

(FILE 'USPAT' ENTERED AT 10:34:40 ON 29 SEP 1999)

L1 2 S STABILIZE# (4A) (CALCIUM PHOSPHATE OR HYDROXYAPATITE OR
TRI
SET HIGH OFF
L2 2 S L1
SET HIGH ON
L3 2 S L2 AND STABILIZE#(4A) (CALCIUM PHOSPHATE OR HYDROXYAPATIT
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1. 5,487,933, Jan. 30, 1996, Prosthetic articles and methods for producing same; Eugene W. White, 428/131; 264/220, 227, 310; 428/134, 156, 213, 220, 338; 623/11, 16 [IMAGE AVAILABLE]

2. 5,232,878, Aug. 3, 1993, Process for producing inorganic biomaterial; Toshihiro Kasuga, et al., 501/10; 106/35; 501/5, 18, 32, 63, 104 [IMAGE AVAILABLE]

US PAT NO: 5,487,933 [IMAGE AVAILABLE]

L3: 1 of 2

SUMMARY:

BSUM(29)

The resulting shaped material must then be stabilized before use in the human body. **Hydroxyapatite** can be **stabilized** by known techniques such as thermal/vacuum processing or chemical cross-linking. Gelatin cross-link treatment renders the gelatin within the hydroxyapatite/gelatin composite less biodegradable. Alternatively, the final process stage can be a high temperature burn off of the gelatin binder to sinter the hydroxyapatite body for strength. If such a burn off is contemplated, the starting materials should have a higher loading of calcium phosphate relative to the gelatin.

US PAT NO: 5,232,878 [IMAGE AVAILABLE]

L3: 2 of 2

SUMMARY:

BSUM(10)

FIG. 5 typically shows the result of observation, through an electron microscope, of the ceramic composite material disclosed in the Japanese Patent Unexamined Publication No. Sho-64-18973. In the drawing, metal fluoride is not shown because the content of metal fluoride is very small. As is clear from FIG. 5, the ceramic composite material has a structure in which fine crystals of calcium phosphate 13 with a particle size of 1 .mu.m or less and fine crystals of partially stabilized zirconia 14 with a particle size of 1 .mu.m or less were mixed together at random. In general, zirconia and calcium phosphate are apt to react with each other. When the two components are mixed together at random as described above, the surface area where the two components are in contact with each other becomes so large that the two components react with each other easily. When **calcium phosphate** and partially **stabilized** zirconia react with each other as described above, **calcium phosphate** and partially **stabilized** zirconia form solid solutions.

As this result, the amount of calcium phosphate is reduced so that excellent biocompatibility cannot be obtained. Further, partially stabilized zirconia is fully **stabilized** by reaction with **calcium phosphate** so that the strength and toughness of the ceramic composite material obtained are often unsatisfactory.